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# ENVIRONMENTAL Fact Sheet

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29 Hazen Drive, Concord, New Hampshire 03301 • (603) 271-3503 • [www.des.nh.gov](http://www.des.nh.gov)

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BB-15

1997

## Sand Dumping - Beach Construction

The dumping of sand into New Hampshire lakes or along their shores to create or replenish a swimming beach is an all-too-common practice. In fact, it is so common that many shore-front residents assume that they have a right to dump sand along their shores, and that sand dumping causes no harm to the lake. Both assumptions are false. This fact sheet explains the regulation of sand dumping and discusses lake impacts that can occur.

### Sand Dumping Regulations

The construction and/or replenishment of beaches is regulated by both the N.H. Wetlands Bureau and the Department of Environmental Services' Water Quality Engineering Section. A single application is required, using the Wetlands Board application form, and a joint permit is issued for projects that meet all wetlands and water quality criteria.

The above permit is required before any sand can be dumped or work begun. Any work completed without a permit may result in the imposition of a fine and/or a removal and restoration order. Civil or criminal penalties may apply for repeat offenders.

### Physical Impacts

Lakes act as settling basins for their watersheds, collecting and accumulating materials that drain into them. This process results in the gradual filling-in of lakes over geological time until they become a marsh and then dry land. Any activity that adds material to a lake over the natural supply will increase the rate of lake filling. The regular addition of sand to a lake, or to the shoreline of a lake where it can erode into the lake, greatly accelerates the process.

If a shoreline does not have a natural beach, it is likely that conditions are such that a constructed beach will not remain indefinitely. The dumped sand will either drift away with shoreline currents or slowly settle through the soft, mucky bottom sediment. Although the sand disappears from view, it does not leave the lake. It is added to the natural sediment load to the lake and hastens the filling-in process.

### Chemical Impacts

The mineral composition of sand is not consistent. Although clean, washed beach sand is primarily quartz, which is relatively inert, sand can contain other materials. In New Hampshire, iron is a common component of sand and gravel. Iron-rich sand will frequently result in the presence of [iron bacteria](#). Although not a health hazard, these bacteria cause aesthetic problems by creating rust-colored slime deposits and oil-like films on the sand as they oxidize the iron.

Sand may also contain contaminants other than iron, all of which have the potential to wash out of the sand and into the water. Clay is a material that, if present in the deposited sand, can cause turbidity problems (reduced water clarity) in the pond. If there is any [phosphorus](#) associated with the dumped sand, it will contribute to increased plant growth in the pond.

## **Biological Impacts**

Dumping sand along the shore of a lake can smother benthic (bottom dwelling) algae and invertebrates, causing a disruption in the food chain of higher organisms including fish. Spawning or nesting sites for fish may also be destroyed by deposited sand, and turbidity from the deposited sand may interfere with normal fish behavior by clogging gills. The physical process of filling-in of a lake from deposited sand has two major biological impacts. First of all, a shallower lake has a lesser volume of water to dilute and assimilate in-coming contaminants, including phosphorus. At a given level of phosphorus loading, a lake's productivity ([algae growth](#)) will increase as the lake's mean depth decreases, all other factors remaining constant. Secondly, as a lake becomes shallower, more of the bottom enters the sun-lit zone and thus the potential for increased rooted plant growth occurs.

## **Local Protection Activities**

Activities that local residents and lake association members can undertake to help protect a lake from excessive sand dumping include the following:

- Educate residents, association members, and town officials about the requirement for a state permit to create or enhance a beach, and about the negative impacts of such activities.
- Encourage association members to minimize the use of sand dumping by adopting an association policy to that effect.
- Work with town officials to adopt a local ordinance to prohibit or restrict the use of sand dumping along lake shores. One approach is to limit the size of beaches.
- Report illegal sand dumping incidents to the Wetlands Bureau.